CLAIMS:

1. A vapor deposition source for use in vacuum chamber for coating an organic layer on a substrate of an OLED device, comprising:

(a) a manifold including side and bottom walls defining a chamber for receiving organic material, and an aperture plate disposed between the side walls, the aperture plate having a plurality of spaced apart apertures for emitting vaporized organic material;

(b) the aperture plate including conductive material which in response to an electrical current produces heat;

(c) means for heating the organic material to a temperature which causes its vaporization, and heating the side walls of the manifold; and

(d) an electrical insulator coupling the aperture plate to the side walls for concentrating heat in the unsupported region of the aperture plate adjacent to the apertures, whereby the distance between the aperture plate and the substrate can be reduced to provide high coating thickness uniformity on the substrate.

2. The vapor deposition source of claim 1 wherein the aperture plate and the manifold includes a high-emissivity material coating that radiates energy into the chamber and a low-emissivity material coating that radiates less energy to the substrate.

3. The vapor deposition source of claim 1 wherein the means for heating includes a high-emissivity material coating that radiates energy into the chamber.

4. The vapor deposition source of claim 1 wherein the manifold is shaped so that the aperture plate is closest to the substrate.

5. The vapor deposition source of claim 4 further including a radiation shield spaced closely to the apertures to minimize the area of the manifold radiating energy to the substrate while minimizing the risk of the shields becoming covered with condensed organic material.

6. The vapor deposition source of claim 1 wherein the region immediately adjacent to each aperture is heated to a slightly higher temperature than any other portion of the aperture plate or manifold to minimize clogging of the apertures.

7. The vapor deposition source of claim 1 including a second heating means for heating the bulk of the organic material to a temperature below its vaporization temperature, and heating the lower portion of the manifold.

8. The vapor deposition source of claim 7 wherein the temperature of the manifold chamber is controlled by the first means for heating and the lower portion of the manifold chamber is actively controlled by the second heating means to be uniform along its length and width and to be the coolest portion of the source in contact with the organic material.

9. A vapor deposition source for use in vacuum chamber for coating an organic layer on a substrate of an OLED device, comprising:

(a) a manifold including side and bottom walls defining a chamber for receiving organic material, and an aperture plate disposed between the side walls, the aperture plate having a plurality of spaced apart apertures for emitting vaporized organic material;

(b) the aperture plate including conductive material which in response to an electrical current produces heat;

(c) means for heating the side walls of the manifold and thereby heating the organic material to a temperature which causes its vaporization; and

(d) an electrical insulator coupling the aperture plate to the side walls for concentrating heat in the unsupported region of the aperture plate adjacent to the apertures, whereby the distance between the aperture plate and the substrate can be reduced to provide high coating thickness uniformity on the substrate.

10. The vapor deposition source of claim 9 wherein the aperture plate includes a high-emissivity material coating that radiates energy into the chamber and a low-emissivity material coating that radiates less energy to the substrate.

11. The vapor deposition source of claim 9 wherein the means for heating includes a high-emissivity material coating that radiates energy into the chamber.

12. The vapor deposition source of claim 9 wherein the manifold is shaped so that the aperture plate is closest to the substrate.

13. The vapor deposition source of claim 12 further including a radiation shield spaced closely to the apertures to minimize the area of the manifold radiating energy to the substrate while minimizing the risk of the shields becoming covered with condensed organic material.

14. The vapor deposition source of claim 9 wherein the region immediately adjacent to each aperture is heated to a slightly higher temperature than any other portion of the aperture plate to minimize clogging of the apertures.

15. The vapor deposition source of claim 9 including a second heating means for heating the bulk of the organic material to a temperature below its vaporization temperature, and heating the lower portion of the manifold.

16. The vapor deposition source of claim 15 wherein the temperature of the manifold chamber is controlled by the first means for heating and the lower portion of the manifold chamber is actively controlled by the second heating means to be uniform along its length and width and to be the coolest portion of the source in contact with the organic material.

17. A method for coating an organic layer on a substrate in a vacuum chamber comprising:

(a) providing a manifold including side and bottom walls defining a chamber for receiving organic material, and an aperture plate disposed between the side walls, the aperture plate having a plurality of spaced apart apertures for emitting vaporized organic material; the aperture plate including conductive material which in response to an electrical current produces heat;

(b) heating the organic material to a temperature which causes its vaporization, and heating the side walls of the manifold; and

(c) concentrating heat in the unsupported region of the aperture plate adjacent to the apertures, whereby the distance between the aperture plate and the substrate can be reduced to provide high coating thickness uniformity on the substrate.

18. The method of claim 17 wherein the aperture plate and the manifold includes a high-emissivity material coating that radiates energy into the chamber and a low-emissivity material coating that radiates less energy to the substrate.

19. The method of claim 17 wherein the heating step includes a high-emissivity material coating that radiates energy into the chamber.

20. The method of claim 17 including shaping the manifold so that the aperture plate is closest to the substrate.

21. The method of claim 20 further including a radiation shield spaced closely to the apertures to minimize the area of the manifold radiating energy to the substrate while minimizing the risk of the shields becoming covered with condensed organic material.

22. The method of claim 17 wherein the region immediately adjacent to each aperture is heated to a slightly higher temperature than any other portion of the aperture plate or manifold to minimize clogging of the apertures.

23. The method of claim 1 includes heating the bulk of the organic material to a temperature below its vaporization temperature, and heating the lower portion of the manifold.